Pediatric Concussion Workshop: Breakout Groups

Each Group will have two primary moderators and we hope to recruit a third "note taker" who will try and record the logic of the conversation on a big white writing pad up in front with the moderators. We will also have NIH personnel to officially take notes. Each group should try to discuss each of the topic areas but the order and time spent on each topic is flexible. Each group should allow 15 minutes at the end of the breakout session to organize their thoughts for presentation upon returning to the main group.

Breakout A: Moderators: *Drs. Tina Duhaime & BJ Casey*
Breakout B: Moderators: *Drs. Steve Broglio & Linda Chang*
Breakout C: Moderators: *Drs. Michael McCrea & Deborah Yurgelun-Todd*
Design and Demographics:

- What age or ages are most relevant and feasible to study?
- What study design (cross-sectional, longitudinal, hybrid, or other) would provide the richest dataset for understanding the effects of concussion and repetitive head impacts?
- What control groups should be considered and used? Other relevant inclusion / exclusion criteria.
- If there are longitudinal measures, what is the minimal number of time points that should be considered?
- Population Demographics: How should demographic factors such as Sex, Social Economic Status, Race & ethnicity be addressed? Do we need geographic diversity?

Outcomes & Behavioral Assessment

- Describe the outcome battery that should be used including:
    - What cognitive test should be prioritized
    - What emotional / affective, substance abuse assessments should be done?
    - Academic assessment – how to assess school performance
    - Are there sufficient CDEs for this study?
    - What domain of assessments are of the highest priority?
- Data sharing issues: should we follow the ABCD study sharing rules.
- How do we best insure high data quality, particularly if there were to be a multi-site study?

Biomarkers: Biofluid and Neuroimaging

- Biofluid Biomarkers
    - Are the candidate markers the same as in adult studies of concussion? If so, do control samples need to be collected or do existing biosamples exist?
    - Can enough sample be taken for the study and to create a biosample resource (similar to the PDBP; https://pdbp.ninds.nih.gov/)
    - Should they consider efforts in proteomics, genomics, and metabolomics?
- Neuroimaging Biomarkers:
    - What type of imaging would be the highest priority to collect?
        - MRI, EEG, CT, PET etc..

      If a child has limited time relative to an adult in the scanner, which modalities are most important to collect? For example, if MRI is considered relevant, is DTI or fMRI more relevant? Should alignment with the ABCD or CARE neuroimaging protocols
- Data sharing issues: should we follow the ABCD study sharing rules.
- Genetics:
    - Is this a priority?
    - SNP or GWAS analytics?
    - If SNP are there priority SNPs?